ACE4072F

2-cell Lithium Battery Charger IC PFM Step-up

Description

ACE4072F are PFM mode step-up battery charge management ICs with operating voltage range between 4.5V to 6.5V. It is specially designed for 2-cell lithium battery charge management with fewer external components. ACE4072F adopts constant current and quasi-constant voltage (Quasi-CV^{TM}) mode to charge battery. On power up, ACE4072F enters charging state, the external N-channel MOSFET is turned on, inductor current rises. When inductor current reaches upper threshold, the N-channel MOSFET is turned off, the energy stored in inductor is transferred to battery. When the inductor current is discharged to its lower threshold, the N-channel MOSFET is turned on again. When BAT pin voltage reaches 8.4V(Typ.) for the first time, ACE4072F enters quasi-CV mode, in which the charge current is reduced. The charge process will not be terminated until BAT voltage reaches 8.4V for the second time. In termination mode, the N-channel MOSFET is turned off. When BAT voltage falls below recharge threshold, the ACE4072F enters charge mode again. ACE4072F's switching frequency can be up to 1MHz, which makes a small-profile inductor usable. The other features include chip enable input, chip over temperature protection, JEITA-compliant battery temperature monitoring, low battery protection and charge status indication, etc. ACE4072F is available in thermally-enhanced ESOP-8 package.

Features

- Input Voltage Range: 4.5V to 6.5V
- Operating Current: 280uA@V_{IN}=5V
- Switching Frequency up to 1MHz
- Operating Temperature: -40°C to 85°C
- JEITA-Compliant Battery Temperature Monitoring
- No Need for External Current Sense Resistor.
- Fixed Inductor Current:
  ACE4072FA: 2.65A / ACE4072FB: 1.65A / ACE4072FC: 1A
- Chip Enable Input
- Chip Over Temperature Protection
- Charge Status Indication
- Automatic Recharge
- Battery Overvoltage Protection
- Low Battery and Short Battery Protection
- Can be Powered by Solar-panel
- Automatic Adaptability to Input Supply with Limited Driving Capability
- Quasi-CV mode to Compensate for the Voltage Loss on Battery Internal Resistance and Trace Resistance

Application

- 2-cell Li+ Battery Charging Management
- Standalone Charger
- Power Bank, POS, Electric Fan, Audio System

Absolute Maximum Ratings

Parameter	Value
VIN and PVIN Voltage	-0.3V to 7.0V
BAT Voltage	-0.3V to 18V
TEMP, $\overline{\text{CHRG}}$, LDRV Voltage	-0.3V to 0.3V
Lx and CE Voltage	-0.3V to VIN
CE and $\overline{\text{CHRG}}$ Current	15mA
Maximum Junction Temperature	150°C
Operating Temperature Range	-40°C to 85°C
Storage Temperature	-65°C to 150°C
Lead Temperature (Soldering, 10s)	260°C

Note:

Stresses beyond those listed under 'Absolute Maximum Ratings' may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to Absolute Maximum Rating Conditions for extended periods may affect device reliability.

Ordering Information

ACE4072FX XX + H

- Halogen - free
- Pb - free
- I M: ESOP-8
- Input Current:
  - A: 2.65A
  - B: 1.65A
  - C: 1A

Notes

ACE does not assume any responsibility for use as critical components in life support devices or systems without the express written approval of the president and general counsel of ACE Technology Co., LTD. As sued herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and shoes failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.